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Peleg Nir

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EXAMINER

HOANG, HIEU T

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/787,341	Applicant(s) NIR ET AL.	
	Examiner HIEU T. HOANG	Art Unit 2452	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/25/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the communication filed on 02/25/2004.
2. Claims 1-54 are pending and presented for examination.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 41-54 are rejected under 35 U.S.C. 101 the claimed invention is directed to non-statutory subject matter. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The method including steps of ... is broad enough that the claim could be completely performed *mentally, verbally or without a machine nor is any transformation apparent*. For example, claim 41 recites steps that are not tied to a particular machine (such as in a software instructions), such as receiving a command, performing transport layer processing, decoding, etc. Correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. For claim 1, "the storage device" in singular, lacks antecedent basis.
7. For claim 4, "said network" lacks antecedent basis.
8. For claim 5, "said transport layer" lacks antecedent basis.
9. For claim 21, "said storage devices" lacks antecedent basis.
10. For claim 47, "said read command" lacks antecedent basis. Applicant is requested to check for lack of antecedent basis errors in the remaining claims.

Appropriate correction is required.

11. Claims 1-19 and 21-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. For claim 1, "FSP" is undefined or not explicitly spelled out in the claims. For claims 22, 41, "FSP" and "CPU" are undefined or not explicitly spelled out in the claims. Correction is required.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Popelka et al. (US 6,081,883, hereafter Popelka).

14. For claim 1, Popelka discloses a gateway apparatus working in cooperation with a host file server for accelerating file sharing tasks wherein all data transfer operations between storage devices and network devices are processed directly through the gateway, said gateway is comprised of:

storage controller in communication with the storage device (fig. 4, SCSI controllers connected to disks);

transport layer accelerator (TLA) in communication with file server network controller (fig. 3, col. 11, lines 13-14, network processor NP 110, comprising CPU 170-172 for performing intelligent data moving and checksumming, connected to network interfaces cards);

local memory for storing communication requests (fig. 1, col. 2 lines 41-42, memory for buffering requests, col. 5 lines 35-57, metadata cache and write cache for managing information requests);

data accelerator engine (DAE) for processing and decoding FSP commands (col. 3 lines 3-7, file storage processor FSP processes FSP requests for data), said engine is interconnected to the file server central processing unit (CPU) and working memory through internal bus (fig. 1, fig. 2, host processor 106 comprises CPU and memory, bus 120) and is interconnected to TLA, the local memory and the storage controller through interconnected buses (fig. 1, bus 120).

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15. For claim 2, Popelka further discloses said local memory is a cache memory (fig. 1, abstract, NP buffer memory is a cache).

16. For claim 3, Popelka further discloses the address space of said local memory is configured to match the address space of said file server's working memory (abstract, NP shares a single memory image with other processors).

17. For claim 4, Popelka further discloses said network is at least one of: local area network (LAN), wide area network (WAN) (fig. 1, WAN).

18. For claim 5, Popelka further discloses said transport layer is able to perform transmission control protocol (TCP) processing of incoming and outgoing data blocks (col. 2, lines 55-58, incoming and outgoing network data format, col. 11, lines 13-14, CPU for performing checksum).

19. For claim 6, Popelka further discloses said FSP is at least one of the following protocols: network file system (NFS) protocol, common internet file system (CIFS) protocol, direct access file system (DAFS) protocol, AppleShare protocol (col. 3 line 50, NFS).

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20. For claim 7, Popelka further discloses said storage controller is at least one of: Fibre Channel (FC), small computer system interface (SCSI), parallel SCSI (pSCSI), iSCSI, parallel ATA (PATA) or serial ATA (SATA) (fig. 4, SCSI controller).

21. For claim 8, Popelka further discloses said storage device is a least one of: disk drive, collection of disk drives, tape drive, redundant array of independent disks (RAID (fig. 4, disk).

22. For claim 9, Popelka further discloses the interconnected bus is a Peripheral Component Interconnect (PCI) (col. 4 lines 59-60, PCI bus).

23. For claim 10, Popelka further discloses said data accelerator engine further comprises: means for interfacing with the host file sever, said TLA, and said storage controller (fig. 1, fig. 4, FSP connected to host, NP and SCSI controllers, col. 2, fig. 3, col. 11, lines 13-14, CPU for performing checksum); means for parsing incoming FSP commands (fig. 9A step 406, FSP receives and processes messages); means for generating a FSP response (fig. 9A step 408, reply); means for controlling said local memory (fig. 1, fig. 4, FSP controlling DRAM 178 which is a metadata and a write cache).

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24. For claim 11, Popelka further discloses TLA performs transport layer processing on a processed FSP command (col. 2, lines 55-58, incoming and outgoing network data format, col. 11, lines 13-14, CPU for performing checksum).

25. For claim 12, Popelka further discloses DAE further decodes FSP command, transfers to the host's file server as a native structure of decoded FSP commands (col. 3 lines 3-7, file storage processor FSP processes FSP requests for data, col. 13 lines 15-33, address decoding of an FSP command), establishes a direct path between said network terminal and said storage controller under control of said host file server (fig. 1, direct data path between clients and storage devices) and generates a FSP response which ends the session of said FSP command (col. 16 lines 55-61, FSP prepares and sends response to NP).

26. For claim 13, Popelka further discloses the data transfer of one or more data blocks is processed over said direct path at wire-speed (abstract, using cached requested data results in fast access to shared data).

27. For claim 14, Popelka further discloses said host file sever provides said gateway with a destination address (col. 13 lines 15-17, col. 14 lines 13-16, address decoding).

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28. For claim 15, Popelka further discloses said destination address comprises: a physical address of said data blocks requested to be read or a physical address indicating where to write said data blocks (col. 12 lines 1-5, physical address of blocks).

29. For claim 16, Popelka further discloses said gateway further comprises a controller software module which communicates with an operating system of said host file sever for the purpose of controlling the processing of FSP commands (col. 12 lines 1-16, directory name lookup table in Unix).

30. For claim 17, Popelka further discloses said FSP command is at least one of the following file system operations: read, write, get attribute, lookup, set attribute, delete, open (abstract, read, write).

31. For claim 18, Popelka further discloses the gateway apparatus is connected to the storage controller and NIC through peripheral channels (fig. 3, connection to NIC is PCI, fig. 4, connection to SCSI controller is PCI).

32. For claim 19, Popelka further discloses the peripheral channels are at least Peripheral Component Interconnect (PCI) buses (fig. 3, connection to NIC is PCI, fig. 4, connection to SCSI controller is PCI).

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33. For claim 20 Popelka discloses a file server including CPU, working memory (fig. 1, host processor, fig. 2, memory), network controller (fig. 2, NIC), storage device (fig. 1, storage) and a designated gateway (fig. 1, combination of network processor, file processor and storage processor), wherein all file data transfer between storage devices connected to the file server and network devices are processed directly through the designated gateway (abstract, NP and FSP process file storage protocol requests from clients to the storage devices).

34. For claim 21, Popelka discloses a file server for accelerating file sharing tasks, said file server comprises of:

- a network interface for the purpose of communicating with a network over which data is transferred to said storage devices (fig. 3, NICs);

- a storage interface for the purpose of interfacing with said storage device (fig. 4, SCSI controllers connected to disks); and,

- a gateway for processing FSP commands and establishing direct data path for processing all data transfer between the network devices and the storage devices (abstract, NP and FSP process file storage protocol requests from clients to the storage devices).

35. For claims 22-40, the claims are rejected for the same rationale as in claims 1-19 respectively.

36. For claim 41, Popelka discloses a method for accelerating file transfer between the file server and network terminals, wherein the file server includes a designated gateway, which creates a direct data path between the file server network controller and storage devices connected to the file server, said method comprising the steps of:

receiving FSP commands; performing transport layer processing of received FSP commands (abstract, fig. 3, col. 4 lines 51-54, col. 11 lines 10-18, network processor NP has buffers for caching FSP requests and a processor for performing checksum segments);

decoding FSP commands; transferring decoded FSP commands native structure to file server CPU (col. 15 lines 40-44, NP builds a FSP message upon receiving RPC requests from clients and transfers it to FSP processor, col. 13 lines 44-56, decode FSP requests and sends them to appropriate Unix file system UFS);

receiving CPU's response (col. 15 lines 47-48, response from FSP, col. 13 lines 44-56, col. 5 lines 35-45, file processor provides responses to file search); establishing direct data path between file server network terminal and file server storage device in accordance with CPU response and FSP commands (fig. 1, direct data path from clients to NIC's and to storage devices);

transferring at least one data block through said data path; generating an FSP response indicating end of FSP session (col. 16 lines 53-61, performs I/O operations then builds FSP response to be sent to clients).

37. For claim 42, the claim is rejected for the same rationale as in claims 6.

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38. For claim 43, the claim is rejected for the same rationale as in claims 5.
39. For claim 44, the claim is rejected for the same rationale as in claims 4.
40. For claim 45, the claim is rejected for the same rationale as in claims 17.
41. For claim 46, Popelka further discloses said FSP command is a read command (col. 9 lines 19-20, read cache).
42. For claim 47, Popelka further discloses said read command comprises at least one logic address of one or more data blocks in a file (col. 12 lines 1-11, logical block address).
43. For claim 48, Popelka further discloses said file server response provides a physical address of said requested data blocks (col. 12 lines 1-11, physical block address).
44. For claim 49, Popelka further discloses prior to generating a FSP response further comprises the steps of: performing a check to determine if said requested data blocks are cached in a cache memory; retrieving from a storage device data which is not in said cache memory; temporarily saving the retrieved data in said cache memory (abstract, check for pre-cached requested data); and, performing transport layer processing of said data blocks (abstract, send response with requested data to the client).

45. For claim 50, Popelka further discloses said FSP command is a write command (col. 11 lines 62-66, write).

46. For claim 51, Popelka further discloses said write command includes one or more data blocks to be written into a file (col. 12 lines 1-5, blocks).

47. For claim 52, Popelka further discloses said file server response provides a physical address of said file (col. 12 lines 1-5, physical address of blocks).

48. For claim 53, Popelka further discloses prior to generating a FSP response, said method further comprises the steps of: receiving said data blocks from said network; temporarily saving said data blocks in a cache memory (col. 11 lines 62-67, write cache for saving write data from clients); synchronizing the writing of said data block with an operating system of said local host (col. 12 lines 1-12, mapping file in Unix OS); and, writing said data blocks in a destination storage device (col. 11, lines 63-64, write cache writes to disk files).

49. For claim 54, Popelka further discloses said FSP response acknowledges that said data blocks were written in said destination storage device (col. 16 lines 5-7, complete input/output operation then response).

Conclusion

50. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Mittal et al. US 2004/0117599.
- Pothapragada et al. US 6,442,682.

51. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu T. Hoang whose telephone number is 571-270-1253. The examiner can normally be reached on Monday-Thursday, 8 a.m.-5 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HH

/Kenny S Lin/

Primary Examiner, Art Unit 2452